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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/607,067	06/25/2003	Shinya Kubota	NGW-006	6557
959	7590	10/08/2004	EXAMINER	
LAHIVE & COCKFIELD, LLP. 28 STATE STREET BOSTON, MA 02109			KLEBE, GERALD B	
			ART UNIT	PAPER NUMBER
			3618	

DATE MAILED: 10/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/607,067	KUBOTA ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Gerald B. Klebe	3618	<i>MJ</i>

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

**A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.**

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on 25 June 2003.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-7 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 25 June 2003 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

*M Klebe  
30 Sep 2004*

**Attachment(s)**

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____.
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____.

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to for the following informalities:

Figures 3A and 3B should be labeled “Prior Art”.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled “Replacement Sheet” in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

## INFORMATION ON HOW TO EFFECT DRAWING CHANGES

### **Replacement Drawing Sheets**

Drawing changes must be made by presenting replacement figures which incorporate the desired changes and which comply with 37 CFR 1.84. An explanation of the changes made must be presented either in the drawing amendments, or remarks, section of the amendment. Any replacement drawing sheet must be identified in the top margin as “Replacement Sheet” (37 CFR 1.121(d)) and include all of the figures appearing on the immediate prior version of the sheet,

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even though only one figure may be amended. The figure or figure number of the amended drawing(s) must not be labeled as "amended." If the changes to the drawing figure(s) are not accepted by the examiner, applicant will be notified of any required corrective action in the next Office action. No further drawing submission will be required, unless applicant is notified.

Identifying indicia, if provided, should include the title of the invention, inventor's name, and application number, or docket number (if any) if an application number has not been assigned to the application. If this information is provided, it must be placed on the front of each sheet and centered within the top margin.

### **Annotated Drawing Sheets**

A marked-up copy of any amended drawing figure, including annotations indicating the changes made, may be submitted or required by the examiner. The annotated drawing sheets must be clearly labeled as "Annotated Marked-up Drawings" and accompany the replacement sheets.

### **Timing of Corrections**

Applicant is required to submit acceptable corrected drawings within the time period set in the Office action. See 37 CFR 1.85(a). Failure to take corrective action within the set period will result in ABANDONMENT of the application.

If corrected drawings are required in a Notice of Allowability (PTOL-37), the new drawings MUST be filed within the THREE MONTH shortened statutory period set for reply in the "Notice of Allowability." Extensions of time may NOT be obtained under the provisions of 37 CFR 1.136 for filing the corrected drawings after the mailing of a Notice of Allowability.

### ***Claims Rejections - 35 U.S.C. § 112, 2<sup>nd</sup> Paragraph***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 3, in line 7 recites the limitation "the through-hole"; since the limitation "the through-hole" has as antecedent basis the through-hole recited in claim 1 as the through connecting between the cabin and the box housing the electricity storing device and since it

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appears from these recitations that there is only one through-hole being claimed, it is not clear how the one through-hole can satisfy the limitation as recited in claim 3 which claims inlet and outlet ports (plural).

Appropriate correction is required.

For the purposes of further examination on the merits, the claim will be interpreted by the examiner as meaning that first and second through-holes connect the electricity storing device box with the cabin of the vehicle and that the first and second through-hole serve as refrigerant inlet and outlet ports, respectively.

***Claims Rejections - 35 U.S.C. § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1 and 3, as understood by the examiner, are rejected under 35 U.S.C. 103(a) as being unpatentable over Morita et al. (US 2003/00341186 A1) in view of Muraki et al.(US 6220383).

a. Morita et al. discloses a fuel cell powered electric vehicle comprising :

(re: claim 1)

a fuel cell controlled at a predetermined temperature;

an electricity storing device for storing electricity generated by the fuel cell; and,

a box (taken as the combination of item 2 and item 3) storing the fuel cell and the electricity storing device (battery, in short) disposed under a floor of a cabin, the box including a plate (taken as the sides of the boxes between the furel cell retaining box (3) and the battery retaining box; (2)) separating the fuel cell from the electricity storing device (battery).

b. Regarding the further limitations of claim 1, Morita lacks explicit disclosure wherein the box has a through-hole between the electricity storing device and the cabin and the electricity storing device is cooled by air which has passed through the through-hole.

c. However, Muraki et al. teaches an electric powered vehicle having an electricity storing device (Fig 2, item 2) housed in a box (6) disposed under a floor (not separately numbered) of a cabin of the vehicle wherein the box includes a through-hole (not separately numbered) between the electricity storing device and the cabin, and wherein the electricity storing device is cooled by air which is passed through the through-hole (refer Fig 2, and associated text col 3, lines 10-50).

d. Therefore, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to have modified the vehicle power system of Morita et al. to include a through-hole in the box for cooling air from the cabin to be routed past the electricity storing device as taught by Muraki et al. in order to maintain the temperature of the electricity storing device at an acceptable level as suggested by the reference at column 1, lines 17-20 and column 3, lines 20-24.

e. Regarding the limitations of claim 3 wherein the electricity storing device has refrigerant passage inlet and outlet ports connected to the cabin via respective through-holes, Muraki et al. teaches the use of refrigerant inlet and outlet ports in the electricity storing device

box where the inlet port is connected to a vehicle cabin, but the outlet port is exhausted to the trunk or environment (refer col 3, lines 43-50). However, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to have modified the refrigerant routing of the combination of Morita et al. and Muraki et al. as applied to claim 1 above so that the outlet port was a return through the vehicle cabin as a matter of obvious design choice, since Applicant has not disclosed that routing the refrigerant outlet into the vehicle cabin interior rather than to the environment solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with the refrigerant air exhausted directly to the environment.

7. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Morita et al. (US 2003/00341186 A1) in view of Muraki et al. (US 6220383) as applied to claim 1 in further view of Bruck (US 2003/0027026 A1).

Bruck teaches a fuel-cell powered electric drive vehicle powered by a fuel cell installed in a container under a cabin of the vehicle and further teaches that it is old and well-known in this art that the housing containing the fuel cell be thermally insulated (refer para. [0005] and [0035]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to have modified the fuel-cell electric powered vehicle of the combination of Morita et al. and Muraki et al. to provide heat insulating material on the plate between the fuel-cell and the electricity storing device in order to reduce the heat burden on the air cooling system that is used to maintain the temperature of electricity storing device as addressed above relative to claim 1.

8. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morita et al. (US 2003/00341186 A1) in view of Muraki et al.(US 6220383) as applied to claim 1 and further in view of Tajiri et al. (US 5490572).

As discussed above, the combination of Morita et al. and Muraki et al. discloses all of the features of claim 1 from which claims 4-5 depend.

The combination of Morita et al. and Muraki et al. lacks explicit disclosure wherein (re: claim 4) the electricity storing device is controlled at a predetermined temperature.

However, regarding the limitations of claim 4, Tajiri et al. teaches an electric powered vehicle in which the electricity storing device (battery) is controlled at a predetermined temperature (refer col 2, lines 21-30).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to have modified the disclosure of the combination of Morita et al. and Muraki et al. to include a temperature controlling subsystem in accordance with the teachings of Tajiri et al. in order to maintain the battery temperature within a range for best performance as suggested by the reference at column 1, lines 17-52.

Regarding the limitations of claim 5 wherein the predetermined temperature of the electricity storing device is maintained in a range from about 40 deg. C. to 50 deg. C., it would have been obvious to one of ordinary skill in the art to have modified the vehicle power system of the combination of Morita, Muraki and Tajiri to maintain the electricity storing device in any suitable range, including a range from 40 deg. C. to 50 deg. C. since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or

workable ranges involves only routine skill in the art. *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

9. Claims 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morita et al. (US 2003/00341186 A1) in view of Muraki et al.(US 6220383) as applied to claim 1 and further in view of Hsu (US 5332630).

As discussed above, the combination of Morita et al. and Muraki et al. discloses all of the features of claim 1 from which claims 6-7 depend.

The combination of Morita et al. and Muraki et al. lacks explicit disclosure wherein (re: claim 6) the fuel cell is controlled at a predetermined temperature.

However, relative to the limitations of claim 6, Hsu teaches an electric powered vehicle in which the fuel cell is controlled at a predetermined temperature (refer col 6, lines 47ff).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to have modified the disclosure of the combination of Morita et al. and Muraki et al. to include a temperature controlling subsystem in accordance with the teachings of Hsu in order to maintain the fuel cell operation within a temperature range for best performance as suggested by the reference at column 2, lines 45- 66.

Regarding the limitations of claim 7 wherein the predetermined temperature of the fuel cell is maintained in a range from about 60 deg. C. to 80 deg. C., it would have been obvious to one of ordinary skill in the art to have modified the vehicle power system of the combination of Morita, Muraki and Hsu to maintain the fuel in any suitable range, including a range from 60 deg. C. to 80 deg. C. since it has been held that where the general conditions of a claim are

disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

***Prior Art made of Record***

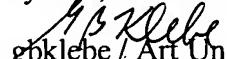
10. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure. The prior art of Mizuno et al., Riemer et al., Nagura et al., Ono et al., Kato et al., and Stone each show electric vehicles with fuel-cell as source of electricity stored in the battery having structures in common with some of the features of the inventive concept of the instant application; Cottreau et al. shows a device for removing heat from a vehicle compartment; Mufford teaches a system for temperature regulation of fuel cells used in vehicles.

***Conclusion***

11. Any inquiry concerning this or earlier communication(s) from the examiner should be directed to Gerald B. Klebe at 703-305-0578, fax 703-872-9306; Mon.-Fri., 8:00 AM - 4:30 PM ET, or to Supervisory Patent Examiner Christopher P. Ellis, Art Unit 3618, at 703-308-2560.

Official correspondence should be sent to the following TC 3600 Official Rightfax numbers as follows: Regular correspondence: 703-872-9326; After Finals: 703-872-9327; Customer Service: 703-872-9325.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

   
gbklebe / Art Unit 3618 / 29 September 2004

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